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USSR Report

TRANSPORTATION

No. 31

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MOTOR VEHICLE

DEFICIENCIES AT KAMAZ REPORTED

Moscow PRAVDA in Russian 2 Nov 80 p 2

[Article by S. Bogatko and R. Sabirov, special PRAVDA correspondents, Naberezhnyye Chelny, Tatarskaya ASSR, under the rubric "The Five-Year Plan: Addresses of Achievements": "The Heights of KamAZ"]

[Text] Nobody would argue today about whether a KamAZ is a good vehicle. A good product speaks for itself. . . . Both drivers and economists have the same opinion: It is an excellent truck. Would that there were more of them.

The KamAZ has even managed to secure the title of flagship of the industry. And that is in advance, for the plant is not yet completely finished. It is growing, and building is being completed, although there are already about 200,000 KamAZ vehicles running over the roads here and abroad. In the Russian Federation, for example, KamAZ's make up 13 percent of the vehicle fleet, but these hard workers haul up to 40 percent of all the freight. Of course, the price of a KamAZ is substantially higher than that of a carburetor-type ZIL truck, but it is accepted more readily, since it does the work of two or three and runs on cheaper, diesel fuel.

In cities and villages, at plants and construction sites, transport workers are asking with great impatience: 200,000 KamAZ's—that of course is power. But so much is produced in a five-year plan period; and when will the plant start putting out its excellent trucks in accordance with the projection—150,000 annually?

Achieving this level of output of the larger trucks depends first of all on the joint efforts of the builders, plant workers and all those who supply the giant plant with equipment, materials, assemblies and parts. Kama complex enterprises now have the capacity to produce 100,000 trucks and 115,000 diesel engines per year. And the Chelny workers succeeded in making their enterprise profitable a year earlier than planned. Vehicle output is more and more stable. Quality improves continuously—from model to model: load capacity is increasing, net weight and fuel consumption have been reduced, engine life, range, reliability and safety are increasing. . . .

Now yet another height has to be surmounted. The builders have to get the second-phase facilities ready and the plant workers have to assimilate the new capacity. There is enough work here for everyone. After all, a considerable part of the industrial shops, vitally needed for the plant, had been put into operation under so-called provisional arrangements. Otherwise we would not now have the thousands of trucks that help so well in the harvest and in hauling freight. The time has come to bring the KamAZ complex to full readiness, and the assembly line operations to cruising speed, to the projected productivity.

The complex distinguishes itself also by the fact that everything in it is important. The giant plant will leave much to be desired if weak spots and unfinished work become apparent. Such a giant could not possibly be maintained without carving up the "family" budget again. Not only does everything being built have to be finished to bring about a unified plant facility, but before launching the second phase, the operations of the dozens of supplying enterprises have to be tracked and aid given them where needed. They too will have to be upgraded. They have to expand, increase output, and adapt themselves to the increased scale of production, to the higher requirements for quality, and to the accelerated pace of the giant vehicle plant. Lags in the maintenance system, for which the KamAZ has assumed the main burden itself, cannot be tolerated either.

There will be interruptions on the plant assembly lines if rates of construction of homes and social, cultural and welfare facilities decline in the city. In ten years, Naberezhnyye Chelny has grown from 30,000 to 330,000 inhabitants. But the city will not be able to grow normally if the surrounding agricultural zone does not provide it with vegetables, milk, meat, poultry. . . . The economic life of the rural area and the city will be stifled without a bridge across the Kama River. And everything taken together--building projects, plant, city, the rural area--will not be able to exist without power: power transmission lines, transformer substations, the Nizhnekamskaya GES, etc.

Outwardly in Naberezhnyye Chelny, conditions do not have the appearance now of the urgent work done, for example, during the construction of "road No. 1" or when the first KamAZ buildings and the first apartment complexes in the region were handed over. Left behind are the desperate, rush 10-day periods and the mass volunteer work on Sundays, when all the new settlers came out with shovels and when tractors got stuck in the mud in the middle of the streets. Communists and Komsomol members rallied enthusiasts, sometimes in rain and cold. During those years, R. Belyayev, first secretary of the city party committee, suffered pneumonia five times. . . .

There is now a construction base in Naberezhnyye Chelny, the largest in the land along the Volga; there is a base for a city--and no temporary, crude one, but a capital, clean one; the first phase of the plant has been assimilated. Under the command of the most experienced builder Ye. N. Batenchuk, the Kamgesenergostroy association has built up cadres of builders--masters and brigade leaders with the highest skills, talented engineers and supervisors of subdivisions, who can solve the most complex problems.

Veterans of the Chelny epopee--many of them are still young in years--remember when the first-phase facilities of the KamAZ were put into operation in December 1976; they remember the labor enthusiasm and effort that reigned in the city, in the plant, in each facility, and in each workplace. What had been accomplished by the Chelny workers then was called the feat on the Kama by L. I. Brezhnev.

And now the builders are at the finish line again. Again the truck city has somehow been put in order and concentrated all over. The second-phase facilities have to be handed over. Very symbolically: the first large trucks, the KamAZ's, that rolled off the assembly line in tuned condition were driven to Moscow, to Red Square, for the days of the work of the 25th CPSU Congress; putting the second phase into operation will be the gift from the workers in Naberezhnyye Chelny to the 26th congress.

This decision has been thoroughly thought out and weighed; it is supported by concrete practical pledges. The progressive brigades of U. Naurbiyev's scraper operators, A. Valiyeva's finishers, K. Al'chikov's masons, M. Suleymanov's installers and Z. Yunusov's concrete workers urged the builders and plant workers to begin a competition under the motto "Second Phase of the KamAZ by the 26th Congress!". The initiative was taken up by all collectives.

From the many hundreds of pledges by the brigades (and just the builders and installers have about a thousand of them in Naberezhnyye Chelny), one common pledge has been formed: assimilate not less than 22 million rubles above plan. Such an amount guarantees achievement of the intended goal.

Are the builders starting this assault on the Kama plant heights from sufficiently firm initial positions? Is the schedule realistic? We asked Ye. N. Batenchuk, chief of construction, to respond to these questions. A decisive man of high principles, Yevgeniy Nikanorovich answered without hesitating: "Absolutely!"

By the way, Batenchuk told us about the serious difficulties with equal directness and frankness. The fact is that the builders came into the final year of the five-year plan with somewhat less than the best indicators. Those 22 million rubles equal exactly the very amount of work that the Kamgesenergostroy collective failed to accomplish last year. There were objective and subjective reasons for that. But today that is not the question. What is important is that the builders undertook in this intensive period the additional work making up almost seven percent of the annual planned amount.

This was made possible, first, by the great aid given the builders this year by the oblast party organization and all the central departments concerned. We were shown a document, approved by the directors of Minavtoprom [Ministry of the Automotive Industry], Minenergo [Ministry of Power and Electrification] and the Minmontazhspetsstroy [Ministry of Installation and Special Construction Work], in which the needs for the construction projects, sources for their satisfaction and deadlines have been scheduled. About 10,000 additional workers have been sent for construction of the KamAZ second-phase facilities. Among them are finishers from some of the country's largest organizations like Bratskgesstroy and Kuybyshevgidrostroy. The largest detachment is from the cities and rayons of the Tatarskaya ASSR. Additional new equipment and construction materials have been allocated for the project.

Second, the builders themselves have also become different than those during the days when the first-phase facilities were turned over. Five years ago, 85,000 were working here. At that time, in the peak period, they assimilated up to 1.5 million rubles per day. The Chelny workers today, with 15,000 fewer builders, are performing about the same amount of work. Just in the last year, output per worker in the association increased 11 percent. True, work is proceeding with great intensity. The whole city works a six-day week. But each Chelny worker understands: the KamAZ is being completed; and such a project occurs only once in a worker's lifetime, and not everyone is given the opportunity to take part in carrying out such a program. Perhaps that is why the skill level of the specialists is growing so rapidly. Yesterday's apprentices-volunteers have become experienced builders and section and brigade chiefs.

The organization of labor in the subdivisions of the Kamgesenergostroy has become qualitatively different too. Mass production lines operate at the sites, the purpose of which is to regularly turn over sections for installation of equipment. Smoothness and steadiness are especially important considering that thousands of machine tools and many automatic lines and conveyors still have to be installed before the end of the year. These lines are operating at a high organizational-technical level and their output is great.

Another innovation. And also not just an idea, but an installed, finely adjusted and tested system: standardized mechanized complexes.

"Our engineers did a lot of work," says I. Mukhrygin, chief of the construction mechanization administration. "They precisely selected the sets of machines, mechanisms and means of transport by types of tasks and are now making good progress without interruption."

The "end product" for these complexes is a ready area. Documentation has been simplified, estimates have become precise, maneuver free, and logic and consistency flawless, so electronics can be introduced into control. This method is operating with high efficiency in Naberezhnyye Chelny.

And, finally, the last thing. Relations between the builders and their customers, the plant workers, have changed for the better on all levels. Counter claims, that prevented common efforts to eliminate deficiencies from developing, have disappeared into the past. Builders have improved the quality of their work and plant workers are responding more promptly to the needs of the builders and installers and helping them all they can. Competition has developed in plant shops for expansion of machine tool and equipment service areas. Partly due to this, plant workers managed to free 4,000 workers to help the builders. The help is considerable, especially in this busy period.

Rapid growth of the association's collective is continuing: KamAZ is adding about 10,000 workers per year. There are about 3,000 brigades in the association. And you will not find any brigade that has not come up with at least one innovation in the last year or two. That is why stabilization of the collective is now so important. A task of no less importance is to achieve steady operation of the equipment. Both problems are intertwined. People like to work in a well-organized plant, but the equipment operates without interruption only when it is operated by capable, knowledgeable specialists. Thus, accumulation and crystallizations. . . .

At the start of this year, KamAZ's progressive brigades appealed to the association's collective to exert every effort to accomplish this year's main tasks. In the process, three major directions were formulated: stabilization of production rhythm, stabilization of quality and stabilization of the collective.

The KamAZ management system is based on the method used at the Volga Auto Plant, with adjustments for scale and time. After all, the VAZ [Volga Auto

Plant] was designed 15 years ago, and much has changed in equipment, technology and management science in these years.

The measure of maturity of the collective is largely determined by the availability of "capital"--workers and specialists with the highest occupational skills, devoted to the plant, who like their work. This "capital" is especially important in enterprises such as the VAZ and the KamAZ where the equipment is complex, at times unique. As a rule, these skilled workers are consolidated in repair and troubleshooting subdivisions. This is where highly trained people, who prefer to solve not the typical, but the non-standard production problems, are especially needed.

The engineer wing is also growing at the giant plant. Specialists are interested in working here. Young people especially want to work here. While a large part of the equipment installed in the first phase of the complex was foreign, that in the second phase consists mainly of machine tools and automatic lines produced domestically and by the CEMA countries. An impressive, creative group has been formed in the main design administration.

There is cause for joy not only in the evident successes in the development of the trucks and growth in production, but also in the very principles used as the basis for operations--the concern first of all for those who will be driving the trucks. Often suggestions incorporated on the initiative of plant engineers and administrators even complicate seriously the work of production engineers and the whole collective. But this has been dictated by a concern for the future of the plant and for the good name of the collective. And it invariably pays off.

Not everything at Naberezhnyye Chelny, however, is proceeding as the situation demands. Arousing great anxiety, for example, is the delay in erecting the general-administrative wings. Ten of them in the complex were to be turned over this year. At the current pace in the best case of the program here only half will be finished.

Much depends on the Chelny workers, but not everything. The efficiency of supply agencies in fulfilling pledges to deliver cement and certain kinds of metal is still inadequate. In the summer, there were often letdowns by the Kama river workers who disrupted the gravel delivery schedule.

In short, the problems are many. They were a particular topic for discussion also at the meeting of the activists of the Tatarskaya Oblast party organization held in Naberezhnyye Chelny. In the meeting, it was noted that fulfilling the pledges to turn over KamAZ's second-phase facilities by opening day of the 26th CPSU Congress is a matter of honor for all communists and all workers. Successful assimilation of capacity and growth in truck output will depend on the degree of construction readiness of the facilities.

KamAZ is being built up, KamAZ is operating and experience is being gained. It has built up great efforts and gathered momentum to start rising to a new height—to assimilate the second-phase capacity.

. . . Passenger car drivers were surprised at first. They had gotten used to passing trucks on grades. And then came the "KamAZ," a vehicle with which such maneuvers do not work: This large truck trudges up a mountain like it was on a level road at 80 to 90 km/hr, without losing speed. The high-revolution diesel engine drives it easily without straining.

The "KamAZ" has good speed, and in this, the best operating condition for it, it yields the highest effect. The plant in Naberezhnyye Chelny has to emerge in the 11th Five-Year Plan with the same optimal operating conditions too.

8545
CSO: 1829

RAILROAD

SOVIETS PURCHASE CZECH-BUILT CHME-3M LOCOMOTIVE

Moscow PRAVDA in Russian 27 Oct 80 p 4

/Article by N. Belov: "From the Polar Area to the Subtropics"7

/Excerpt7 They have recently begun tests of the new heavy 1,500 horsepower diesel locomotive. It has a comfortable cabin and is equipped with an electrodynamic braking system and an automatic control. In the forthcoming five-year plan Czechoslovakia plans to deliver 1,500 such locomotives to the USSR. At present in various climatic zones of the Soviet Union - from the polar regions to the subtropics - there are nearly 4,500 Czech locomotives in operation. Before the end of this year Soviet railroad workers will receive another 125 locomotives from Czechoslovakia.

To hasten the assembly of locomotives and to ensure the maximum standardization, the Soviet Union is supplying Czechoslovakia with assembly parts: coupling devices, brake system parts, radio receivers and other equipment. The exchange of experience is one of the important aspects of the cooperation between the Soviet Union and Czechoslovakia. A good example of this has been the traditional "equipment days", which were held this time in Minsk. In Minsk the participants discussed ways to improve the designs of locomotives and to create new models.

8927
CSO: 1829

WORKERS ASSIGNED TO BAM CONSTRUCTION

Life in BAM Region

Alma Ata KAZAKHSTANSKAYA PRAVDA in Russian 11 Nov 80 p 2

> [Text] "Workers of the Soviet Union! You are to accelerate the development of the productive forces of Siberia and the Far East. Above the rates of construction of the Baykal-Amur Main Line [BAM]!" These lines from the October appeals of the CPSU Central Committee in respect to a specific region are addressed to all and this again emphasizes what importance the party attaches to the work which has been undertaken beyond the Urals. This new appeal, spawned by the 10th Five-Year Plan, is undoubtedly addressed to us Kazakhs. The republic whose biography is adorned with the national epics of the Turksib [Turkman-Siberian Railroad] and the virgin lands is trying to reciprocate by a contribution to the new, even more magnificent and gigantic project undertaken by this native socialist state.

Exactly a year ago a special-purpose train arrived in Tynda--the capital of the BAM. It delivered 550 soldiers of the first All-Union detachment of young railroad workers. The volunteers, including Kazakhs, comprised the backbone of the just formed Tynda branch of the road. They faced the task of putting into operation the Tynda-Berkakit line, which was ready to be turned over for use and was expected to join Yakutia with the outside world.

The youngsters proved themselves stalwart lads. Despite the severity of the climate and the unsettled conditions of life, the overwhelming majority of them became adjusted in the new place, increased their skills, and occupied key posts in production. With the very active participation of the warriors of the detachment, during the year approximately 100 million tons of national economy freight and more than 500,000 passengers were transported on the BAM and the line itself, which had been extended through the mountain ridges and Mari, was made a high-speed facility.

In light of all this, the management of the line deemed it necessary to conduct an assembly of the young railroad workers.

And this is what transpired. On a bright and memorable holiday the chief of the board of directors of the BAM and Deputy Minister of Railways V. P. Kalinichev reported the glad news that on that day the Baykal-Amur Main Line, on hundreds of kilometers of which traffic had already been opened, was designated as an independent--the 33rd such--railroad of the country. With Tynda line, it is part of the Northern Baykal and Urgay divisions and to operate them two more key detachments of young railroad workers are being formed.

At the assembly I made the acquaintance of a man who has had a remarkable career--Tleutay Biryukbayev. He graduated from a school in Ushtobe, where they make Kazakh tents. His father, a former children's school official, is an experienced Turksib functionary--he works as a senior foreman at a railroad car technical inspection point. It may be that this prompted the son to choose the vocation of railway engineer. A diploma from the Novosibirsk Institute of Railway Transport served him as a "transit ticket" on the BAM.

Several days ago Tleutay, who had demonstrated his capability as a professional youth leader, was appointed chief-of-staff of the Komsomol Central Committee in the Yakutsk sector of the BAM. He had to proceed straight away to the quarry and to send in time for the assembly a relay train with the now famous Deryungra coal.

"The Deryungra coal is now the chief object of the concern and pride of the Komsomol organizations and the combined staffs," Tleutay explains. "They say that when the Japanese businessmen, who are investing assets on a compensatory basis in the development of the deposit, first saw the high-capacity layers, which in places attain 80 meters in size, tears welled up in their eyes and they fell on their knees at the edge of the pit. This region is now shipping its 1.5 millionth ton of this high-grade coking coal.

Of course, I wanted to find out how life is in the Yakut land.

"I felt at home here when I heard 'Kel'monna' in the Yakut language, "Tleutay laughed. "It seems our languages are very similar. This is a friendly and affable people. And they have given me a gift of good fortune--my wife Galya, whom I call Gulya. She is a doctor by profession. And we have two growing sons: Zhanat and Timurzhan. And as far as the winter itself is concerned, here Tleutay hesitated, trying to find the right words to express his enthusiasm: "I will say one thing: in Kazakhstan I never had a gun in my hands but in Yakutia I have become an inveterate hunter. And the distances are so great!" He raised his hands. "From Berkakit, which in the Evenk language means 'places where they aim crossbows at the hares,' to the white polar bears of the Arctic Ocean."

"And yet don't you miss home, your native village?"--I wanted to know.

"There isn't especially any time to miss it. Then there are many Kazakhs here. I just chanced to meet some. The radio operator on the helicopter flying from BAM to Tyumen is Seril Kamalov, the former second secretary of the Oktyabr'skiy raykom of the Komsomol of Alma-Ata and Karaganda native Maydan Bekzhanov is working as chief engineer of the floating base. In Neryungri we have a Kazakh girl, Saule Kazyura--an engineer for an LEP [electric power transmission line] substation.

"We do not, of course, forget our village. And if you want to try it, one could even try the cold at the pole. Working there as first secretary of the Verkhoyanskiy raykom of the Komsomol is Yerbol Zhanisov, a native of Kayl-Orda."

The kitchen in his home, it may be said, has been made into an office--everything is covered with geographic maps. It is the meeting place of two of his passions--cooking and travel.

"I can regale my village with the Yakut language," Tleutay said, smiling archly.

But what jobs face the chief-of-staff in regard to the return from the assembly?

Biryukbayev begins to tick off the jobs on his fingers: get the labor forces ready for the concentrating mill and the home construction combine, the covered stadium for the winter, himself for the winter session: he wants to add a construction specialty to his railroad worker's diploma. The situation makes it imperative. You see, the South Yakutsk siding office only recruits the personnel and all the more tangible work must be continued in the future by the Berkakit siding for Yakutsk and that means the necessity to build and build.

In conclusion, I ask to whom he would like to send regards in the homeland.

"I just returned from the homeland two weeks ago," he says. "The meetings everywhere were astonishing. Of course, the visitor from the BAM! And in the Taldy-Kurgan Komsomol obkom the meeting was especially warm--not long before the reception for me they received a creative group of Yakul writers and, remembering it, they applied it directly to me. When it was revealed that it was urgently necessary for me to get to my ailing father in Ush-Tobe, the first secretary of the obkom Komsomol, Kuanysh Kurmashev, declared this a special assignment for the entire airport.

In short, greetings to all my fellow countrymen and an invitation to come to the BAM parallel. Working hands are needed there.

From Bashkiriya

Moscow SEL'SKAYA ZHIZN' in Russian 16 Sep 80 p 1

[Text] The Chiefs Help--Tynda (Amurskaya Oblast)--Envoys from Bashkiriya have arrived at the shore of the water reservoir of the Zeyskiy GES, over which they are constructing one of the largest railroad bridges of the Baykal-Amur Main Line. They have begun to build the homes which will soon house the construction workers from the autonomous republic.

Along with the bridge crossing the artificial sea they will establish a transport center. The Bashkir construction workers face the task of erecting a compound for the railroad workers there.

The patrons from the cities and the Union and autonomous republics who are giving voluntary assistance in the construction of the populated points on the mainline route are helping to considerably expedite the starting of operation of the BAM zone.

Another BAM Railroad Station

Moscow SEL'SKAYA ZHIZN' in Russian 23 Sep 80 p 1

[Text] On the Zeya Sea (Central BAM Sector)--

The construction of another BAM railroad station has been begun on the Zeya Sea shore. Envoys from the Bashkir ASSR have arrived to build it--Yu. Baklanov

7962
CSO: 1829

RAILROAD

UDC 656.225.073.5/.6+073.437:662.64/.66

PREVENTING LOSS OF COAL IN TRANSIT

Moscow ZHELEZNODOROZHNYY TRANSPORT in Russian No 10, 1980 pp 23-25

[Article by Candidates of Technical Sciences N. S. Voytyuk and E. V. Shledevits: "Ensuring Protection of Coal During Transport"]

[Text] Ensuring the protection of anthracite coal during shipment by rail transport is a major national economic task. Anthracite coal comprises more than 20 percent of all rail freight turnover. In the future, we anticipate a significant increase in coal mining and a corresponding increase in coal shipments.

At the same time, current practice in transporting this most important freight does not meet the demands which have arisen. Research done by the Novosibirsk Institute of Rail Transport Engineers (NIIZhT) showed that annual coal losses due to blow-off and leakage are quite considerable, occurring basically in smaller chunks of coal. In the Donetsk, Kuznets, Karaganda and Pechora basins alone average losses per gondola car shipped out were 0.5 to 2.1 tons of coal.

Jointly with the freight department of the VNIIZhT and the Institute of Mineral Fuels (IGI) of the USSR Ministry of Coal Industry, the "Freight Protection" branch scientific research laboratory of the NIIZhT conducted a complex of theoretical and experimental research, including some under operating conditions at train speeds of 100-120 km/hr. The goal of the research was to choose new technical means and progressive technology for shipping coal and other free-flowing and fine-sized freight without losses. It has been established that, if the current shipping conditions are retained and if train speeds are increased to 120 km/hr, these losses will increase 2.5- to three-fold and might reach an average of 5-7 tons per gondola car.

In extensive anthracite coal shipment experiments in the Kuznets, Donetsk, Karaganda, Pechora and Central Asian basins, about 8,000 gondola cars were shipped out with this solid mineral fuel. Monitoring reweighings were made at loading and unloading sites, as was a commission check of the condition of 10,000 gondola cars in order to determine their fitness to transport anthracite coal without losses.

Analysis showed that the size of the losses of small pieces of coal during transport by rail is influenced by the running speed of the freight trains, by change in particle size (instead of large pieces, as were previously shipped, we submitted for shipment in the gondola cars coal concentrates, hydraulically mined coals with particles up to 13 mm, which currently comprise about 50 percent of the coal shipped), by the conformity of gondola car undercarriage design to the kind of freight being shipped (coal concentrate particle size two- to 10-fold smaller than the structural gaps) and by deterioration in the technical condition of the bodies of the gondola cars being run (the intensiveness of their use is three-fold higher than other types of cars, so individual body subassemblies wear considerably faster and it is harder to maintain them in technically sound condition).

The experimental checks enabled us to establish that in transporting anthracite coal in open rolling stock, there are two types of losses which differ from one another: small particles are blown out by air flowing over the moving train (55 percent) and coal leaks out through structural gaps and spaces in the gondola car body (45 percent). The most important factor other than the above influencing the amount of loss is the distance the freight is shipped, the method of loading (degree to which the coal is compacted, "cap" height) and others.

Rolling stock represents a poorly streamlined body. Its surfaces can be divided into areas of high and low pressure. As a consequence, the surrounding air is set into aimless motion, generating various local currents relative to the gondola cars and the free-flowing freight. The amount of coal lost due to being blown off by the air demands foremost on the speed at which the train is moving, the humidity and particle size of the coal, and the shape of its surface. The air flow from oncoming trains, the condition of the track, the presence of contact supports, tree stands and others have a substantial influence on these losses.

When gondola cars are built, the existing methods of working the parts and assembling the individual body subassemblies do not ensure that they butt tightly up against each other. As a result, structural gaps reach 7 mm, even in new gondola cars. At the same time, coal with particles up to 6 mm comprises 20 percent of all coal shipped. Coal leaks through gondola car body gaps given minimal moisture, lack of compacting and sufficiently high train speed.

In order to study more thoroughly the processes of coal blow-off and leakage at traffic speeds of 60-120 km/hr and to choose promising methods of preventing freight losses, we organized two high-speed experimental trains which ran an experimental sector from Omsk to Novosibirsk on the West Siberian Railroad for a month. Recommendations covering an entire complex of measures were worked out for introduction on railroads, at coal industry enterprises and in car-building plants. Some measures were organizational in nature and required no large capital expenditures.

We should include among the most important proposals improving existing methods and developing new, scientifically based rules for loading and shipping free-flowing freight in open rolling stock. New rules approved by the Ministry of Railways anticipate selecting empties for loading as a function of type of freight, leveling the surface of the freight using the simplest possible devices, choosing an optimum "cap" height as a function of the physical-mechanical properties of the coal, establishing definite freight loading requirements, and a number of other organizational measures.

One of the most effective methods of reducing coal losses is to level and compact the surface of the coal in gondola cars. The rules for shipping freight of small particle size in open rolling stock anticipate an optimum loading height and a number of other requirements. The method, device design and technology for leveling and compacting coal loaded in gondola cars have been worked out. An experimental check of the method proposed and the positive results obtained permit ensuring the extensive introduction of coal leveling and compacting devices at coal industry enterprises.

The method of static coal compacting is based on the use of special compacting rollers which enable us to reduce blow-off losses by 10-20 percent and improved use of gondola car load capacity by shaping the coal cap into an optimum size and by achieving the necessary degree of compaction. The basic element in the device is the compacting roller. Its shape results from the demands made as to coal "caps" for shipping by rail at high speeds.

The technological process of leveling and compacting is quite simple. When the device is put where the loaded cars emerge from under the hoppers, a roller is lowered into the first gondola car and is rolled across the surface of the coal, compacting it to an optimum height. The speed at which the gondola cars move under the device depends on the time needed to load the rolling stock.

In order to improve gondola car load capacity use and simultaneously reduce operating device (preliminary compaction plate) losses, it is appropriate to impart forced vibration to the load. Use of vibrating rollers increases gondola car load capacity use by 2.1 tons.

Experience in operating coal compaction devices has demonstrated their high degree of reliability and effectiveness. Thus, the economic impact of using them at "Kuzbassugol'" combine is 130,000 rubles per year. Similar devices must be built wherever coal of small particle size is shipped out.

In 1979 alone, more than 50 million tons of coal of small particle size was compacted before being shipped out. This enabled us to reduce losses by 25,000 tons and to improve car load capacity use by 0.5 to 3.5 tons. Were compactors to be introduced at all coal-loading points shipping out coal of small particle size, the economic impact would be at least 10 million rubles per year. For the network as a whole, about 162,000 gondola cars could be freed for other work by compacting coal of small particle size.

A fundamentally new method has been developed for preventing losses of coal of small particle size due to blow-off. It uses protective films. Economically, the most promising protective films are derived from pulp and paper industry wastes. During the experimental shipments period, a total of more than 3,000 gondola cars were covered with protective film. The protective film was laid out and spread over the surface of the coal using a device mounted on a mobile laboratory-car.

The construction cost of the protective film applier is 200,000 to 350,000 rubles and operating expenses to maintain it are 80,000 to 100,000 rubles per year. According to calculations made by "Sibgiproshakht" institute, one-time capital investments to install a complex to prevent coal losses at the Belovskiy Central Enrichment Factory will be recompensed in less than a year.

The Institute of Mined Minerals recommends protective films consisting of water-mazut emulsions and used oil. The question of which type of protective film to use must be decided on the basis of technical-economic calculations, with consideration of the use of the initial materials and siting of the installations to apply them.

Films proposed by the NIIZhT and IGI have been tested at different temperatures and under various meteorologic conditions. They have demonstrated good protective properties and completely prevent coal losses due to blow-off en route both at existing train speeds and at speeds of up to 120 km/hr.

The research resulted in the proposal of standard design and technological resolutions which were used as a basis for developing and building installations at the Abashevskiy (Kuzbass), Karaganda, Vorgashorskiy (Vorkuta) and Voroshilovgrad (Donbass) central enrichment factories. Calculations show that the construction and operation of installations to apply protective films to the surface of loaded coal of small particle size provides a total economic impact of about 300,000 rubles per million tons of coal shipped.

However, these measures are being carried out insufficiently quickly. The plan is to build coal compaction devices for gondola cars at all coal-loading points shipping out coal of small particle size. Along with this, we plan to solve the problem of where to install protective film application devices. The Ministry of Railways and Ministry of Coal Industry should speed up this work.

Shipping coal in gondola cars using protective film and with labyrinth sealing of the roof hatch and end door gaps enables us to ensure that all freight will be retained when shipped great distances at high train speeds. Consequently, the technical feasibility of eliminating coal losses in rail shipments has been demonstrated.

Operating requirements have been developed for the bodies of gondola cars being designed and built which should prevent coal leakage. Using NIIZhT developments, the Uralvagonzavod [Urals Rail Car Plant] has worked out blueprints for and created two prototype 73,500 cubic meter coal cars with labyrinth hatch sealing and single-leaf end doors with side slide bolts. Kryukovskiy Car Plant has built a prototype all-metal four-axle gondola car with partial roof hatch sealing where the hatch butts up against the center beam. These experimental cars have passed state operating tests.

Updated versions of operational gondola cars have also been prepared with a view towards preventing leakage. The Ministry of Railways has decided to update a portion of the fleet of previously built gondola cars. The old body will be completely removed and a welded all-metal body with a blank floor and no doors will be assembled on the frame.

As of now, 230,000 operating-fleet gondola cars have already been modernized by replacing the wooden sheathing with metal. Each year, the doors on several tens of thousands of gondola cars are sealed in the course of depot repairs. The question of adopting a corresponding resolution on the size of roof gaps in car manufacture has also been examined and the number of hatches being replaced by newer and stronger ones has been increased.

Moreover, the appropriateness of organizing shipments of coal of small particle size on the Osinniki - Magnitogorsk, Vorkuta - Cherepovets, Karaganda - Magnitogorsk and other peripheral mainlines in unit trains made up of special or modernized gondola cars has been demonstrated. The economic impact of operating them just on the Vorkuta [illegible] - Cherepovets line will be about 1.2 million rubles per year.

Experience in operating peripheral unit trains consisting of gondola cars with blank bottoms on the Olen'ya - Cherepovets II line to ship iron-ore raw material has shown that losses were reduced by 10,000 tons per million tons of freight shipped. The basic directions of shipping free-flowing freight in peripheral unit trains have been studied and the spheres and sequentiality of their introduction have been determined.

Steps taken by the ministries of railways, coal industry and ferrous metallurgy have enabled us to reduce anthracite coal losses by 220,000 to 230,000 tons and losses of iron ore concentrate by 35,000 to 40,000 tons per year.

On the basis of a great deal of factual material obtained during the laboratory research and large-scale experimental shipments, differentiated draft norms for natural losses of small-, ordinary- and large-sized coals have been worked out and approved by the USSR Gossnab using a NIIZhT method agreed to by the USSR Ministry of Railways and the USSR Ministry of Coal Industry. The new norms take into account the physical-mechanical properties and class of coal and the distance involved. In preparing the draft norms, concrete measures were developed and proposed for reducing anthracite coal losses and on the sequence in which these measures are to be introduced.

The experience accumulated and the high technical-economic effectiveness of measures aimed at protecting anthracite coal in shipment permit the conclusion that a comprehensive solution to the problem of preventing losses of free-flowing freight shipped by various types of transport is possible. Resolving this task, especially given higher train speeds, will enable us not only to retain millions of tons of anthracite coal, iron ore concentrates, fluxes, coke, peat, mineral fertilizers and other free-flowing freight for the national economy and to prevent pollution of the environment, but also to eliminate the accompanying expenditures and difficulties caused railroad operation by these losses.

The task of ensuring the protection of free-flowing freight in shipment requires the involvement of specialists in a whole series of branches of science and engineering. It touches the interests of shipper and recipient enterprises of many ministries and departments, rail transport and car-building industry. Solving it is associated not only with evaluating the possibility of specializing a portion of the freight car fleet and improving the design of their bodies and leaf-spring suspensions, but also with prospects for developing ore-mining and other branches of industry and for improving production technology.

The proposals on protecting coal in shipment have been reviewed by the section on the efficient use and economizing of fuel and energy resources of the USSR Gossnab's Scientific and Economic Council. Appropriate recommendations were adopted, according to which plans for introducing scientific developments into production must be prepared and implemented.

In view of the importance of the problem of reducing losses of free-flowing freight in shipment and protecting the environment from pollution, it is appropriate to request that the State Committee for Science and Technology attached to the USSR Council of Ministers examine the possibility of including this question in the long-range socioeconomic development plan. Basic provisions of scientific-technical forecasting to prevent losses of free-flowing freight during shipment by rail, as worked out by the NIIZhT and VNIIZhT, could be made the basis of recommendations.

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RAILROAD

ELECTRIC LOCOMOTIVE PRODUCTION AT NOVOCHERKASSK PLANT

Moscow KOMMUNIST VOORUZHENNYKH SIL in Russian No 20,Oct 80 pp 40-42

[Article by Captain First Rank A. Ivanov: "Electronics Are Expanding the Frontiers"]

[Excerpt] The Novocherkassk Order of Lenin Electric Locomotive Building Plant is one of the largest enterprises in the Soviet Union. It manufactures mainline locomotives with a full production cycle. But the plant is not known just for this product. It also produces various industrial traction units which are sent throughout the world.

Within a relatively short period of time the plant's collective has developed and assimilated the manufacture of twenty kinds of freight and passenger electric locomotives, 14 models of industrial locomotives and other equipment. Here is some more convincing data: the total product list for the plant exceeds 1,400 designations; and simultaneously120,000 different articles are being processed.

To judge from these figures the production process at the plant is very tight. To successfully cope with such a volume of work it was necessary to adopt a new, progressive technology, which corresponds to the modern level of production.

To ensure the smooth production of locomotives and other equipment at the Novocherkassk plant, it became the first plant in the Soviet Union to adopt a system of continuous operational and production planning. What makes this system different? The difference lies in the fact that the system helps to more fully encompass all of the small details of the production process and to maintain a smooth rhythm. Subsequently on the basis of this system the scientists, engineers and workers have created an automated system, the foundation of which is comprised of computers. The adoption of the ASU [automated control system] has yielded an annual economic savings of 809,000 rubles at the plant.

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RAILROAD

BRIEFS

OBLUCHYE RAILWAY ELECTRIFICATION--An extensive program of electrification of the Obluchye section of the railway is planned and preparations are underway at the Obluchye locomotive depot for changing to electric traction, which it is planned to introduce in December 1981. Construction of a building for the technical examination of electric locomotives will begin in 1981 while supports for the overhead contact wires and foundations for traction substations are being built on the Bira-Arkhara section of the railroad. [Khabarovsk Domestic Service in Russian 0930 GMT 4 Dec 80 SE]

CSO: 1829

OCEAN AND RIVER

GUZHENKO ADDRESSES INTERNATIONAL SHIPPING PROBLEMS

Moscow MORSKOY FLOT in Russian No 10, Oct 80 pp 1-4

[Article by T. Guzhenko, minister of the maritime fleet: "Problems of International Shipping"]

[Text] In glancing back today at the 1970's, we feel fully justified in stating that this past decade was one of the most stormy in the history of world shipping both from the point of view of technological progress as well as that of the structural changes in international maritime haulage. Merchant shipping as a sector of the world economy has, of course, not developed in isolation. The principal tendencies of its development, as well as the causes giving rise to various phenomena, are objectively subordinated to the general laws of mankind's socioeconomic development. Even the inveterate adherents of the capitalist mode of production have now been compelled to acknowledge that the ratio of forces in the world is steadily changing in favor of socialism and to the detriment of imperialism.

During the thirty years of the existence of CEMA, which now unites ten states in Europe, Asia, and America, the share of its participants in the world's industrial output increased from 18 percent in 1949 to 331/3 percent at the present time. Having multiplied their own economic potential many times over, the CEMA member-countries have come to occupy a prominent place among the world's most developed industrial states.

Another factor of decisive importance in the international arena is comprised of the achievements of the national-liberation movement. If after the end of World War II the colonies and dependent territories occupied more than 28 percent of the world's land surface, where 30 percent of the planet's population lived, now the remaining colonial possessions account for about 2 percent of the territory and less than 1 percent of the world's population. The weight and influence of the former colonial and dependent countries have grown a great deal, and they have entered upon the path of independent national development. They have nowbecome fully entitled participants in international political and economic relations and, in many cases, also authors of important initiatives, which frequently make a serious imprint on the development of international relations, including those in specific spheres of cooperation, for many years ahead. Inasmuch as the developing countries comprise the most numerous group among the members of the United Nations, there is no doubt that the overwhelming majority of the world community would want the 1980's to become a genuine decade of restructuring international economic relations, years of the emergence of a new world economic order, based on equal rights and justice.

The reasons for this are more than sufficient. In the decade of the recently elapsed 1970's many leaders of the developing countries believed that the steady growth of the three centers of present-day capitalism--the United States of America, the Common Market, and Japan--in and by itself also drew the backward, lagging countries into an accelerated economic development. The prolonged depression in the economy of the Western countries has not only debunked these illusions but has also demonstrated in all clarity that the well-being of the capitalist method of production is possible only under conditions of the further economic enslavement of the former colonies and semi-colonies. The rate of economic development of the developing countries has not increased at all over the past ten years. If we exclude the oil-producing countries, then the deficit in the balance of payments of the developing countries grows at a headlong pace and in 1979 amounted to the enormous sum of 73 billion dollars. According to data of the IMF (International Monetary Fund), the foreign debt of the developing countries has already reached 400 billion dollars and continues to grow further. The funds obtained by them for all possible plans of development and their beneficial aid funds are already insufficient even to cover the interest on various loans and other foreign debts.

Merchant shipping, which constitutes the sector of production with the maximum foreign economic bearing, cannot help but reflect the competition between various socioeconomic systems. It reacts sharply to the development of conflicting political processes arising as the result of the resistance of the developed capitalist countries to the struggle against neocolonialism and for social progress. We can state without exaggeration that shipping today stands on the threshold of this opposition and, in this regard, it is experiencing radical changes in the system of traditional international relations. It is sufficient to say that the market-type commercial competition is giving way more and more frequently to political decisions and, as a result, to the ever-widening state regulation of the economy of merchant shipping. These processes in turn are stimulating the polarisation of the positions of individual countries and groups of states in matters affecting international relations in worldwide maritime shipping.

Returning to the activity of the UN, it is necessary to dwell first of all on the "round of global and active negotiations on international economic cooperation for developmental purposes" which is now being planned.

The numerous conferences, seminars, and sessions of various UN organs which have been held during the last six months have not left any doubt that the initiators of the "global negotiations" intend to compel the imperialist circles of the leading capitalist countries to abandon the neo-colonialist course directed at continuing and deepening the exploitation of the former colonies and semi-colonies. In the report of the General Secretary of the UN, which was published as a preliminary to the special session of the General Assembly (25 August--5 September, 1980), it is stated that for this purpose we must carry out "basic changes in a wide sphere of relations between the developing and developed countries. In particular, there must be changes in the structure of world production, consumption, and trade."

On its part, the "Group of 77" introduced a specific program which proposed, in particular, to convoke a UN conference on global negotiations in the area of international cooperation. This conference is planned to be held in New York from 15 January through 11 September, 1981 and is supposed to be all-encompassing in nature. According to the concept of the initiators, this conference should result in a complex of specific economic agreements, mandatory for all the participating states.

Most important for socialist maritime transport, as well as all world shipping, may be the first of the five sections of the topic proposed for this 1981 conference. Agreements in this area will affect increases in the cost of exporting semi-finished goods and raw materials of the developing countries, the expansion in these countries of the industrial processing of their own raw materials, as well as an increase in their share in trade and maritime hauls.

As a preliminary to the implementation of these long-range plans, the Secretariat of UNCTAD (United Nations Conference of Trade and Development) has worked out its own strategic proposals in the area of merchant shipping. Among other things it has proposed that the share of the developing countries in the total tonnage of the world merchant fleet should amount to 20% by 1990 and 40% by the year 2000. It is also proposed that growth in the Gross National Product of the developing countries in the current decade amount to 7.5% annually. Under these conditions their share in the world industrial production would grow to 18% by 1990 and 25% by the year 2000. There should also be an increase in their share both in the world export of foodstuffs and in that of agricultural products up to 35% and 50% respectively, while the exports of industrial goods should increase to 20% and 30%.

Thus, the years just ahead of us promise to become a period of intensive international activity with regard to restructuring economic relations, including those in shipping.

If we evaluate the composition of the world fleet by groups of states which in fact own maritime tonnage, then out of 681.5 million tons deadweight, as of 1 July, 1979, 350.5 million tons, or 51.5% were registered in the 24 capitalist countries which are united in the OECD (Organization for Economic Cooperation and Development), another 214.5 million tons, or 31.5%, which belong, for the most part, to shipowners from these same 24 capitalist countries sail under the flags "of convenience" of Liberia, Panama, Singapore, and others, while the share of the 100 or more young developing states of Asia, Africa, and Latin America comprise only 9.4 percent of the world tonnage, or 64.2 million tons deadweight. Moreover, the nine maritime countries of CEMA have at their disposal 38.2 million tons deadweight, or 5.6 percent of the fleet registered in the world. Still another 2 percent belongs to the PRC, UAR, and Israel.

By controlling through the conditions of commercial contracts the selection of the carrier, the Western, industrially developed countries and the transnational industrial corporations have concentrated in their hands the haulage of more than 90 percent of the mass,bulk raw materials, and, above all, petroleum, iron ore, coal bauxite and phosphate minerals, whose producers are, in the overwhelming majority, the developing countries. According to the estimates of the quite reliable statistics of the UNCTAD Secretariat, the gross revenues alone of the shipowners who use the flags "of convenience" and whose fleet consists almost exclusively of tankers and bulkers (bulk-cargo carriers), amounted to more than 25 billion American dollars in 1978. It is not surprising, therefore, that such a "price question" creates an ever-increasing exacerbation in the encounters between the transport-political concepts of the West and those of the developing countries, which are justifiably laying claim to a substantial participation in hauling cargoes of their own foreign trade, using ships of their national merchant fleet. These conflicts came to a head at the Fifth Session of UNCTAD, which was held in May 1979 in Manila in the Philippines.

The participants in the Fifth Session of UNCTAD know that almost all the problems of world trade and development which were discussed in Manila ran up against a blank wall of non-understanding on the part of the group of the developed capitalist states, against their striving not to allow a weakening of their own positions in managing the strategy of the economic development of these former colonies and semi-colonies.

At the same time the principled position of the socialist countries allowed them to reveal the groundlessness of the concept of "equal responsibility" of all members of the international community for the state of affairs in the world economy, as set forth at the Conference by the Western states. The developing countries were once more convinced in practice that the countries of the socialist community are their natural allies in the struggle for just and equitable economic relations, against a strengthening in international ties of any attempts at dictation and discrimination on the part of their more powerful partners in the persons of the capitalist states and their monopolistic associations.

The situation of opposition to the economic and trade strategy of individual groups of states was also repeated in the discussion of the questions of international shipping which were included in the agenda of UNCTAD-V. The conflicts proved to be so irreconcilable that the resolutions on these problems were put to a roll-call vote. Herein Resolution 120 (V), which requires the "adoption of measures to guarantee the equitable participation of the developing countries in the haulage of all cargoes and, particularly, of the mass cargoes of their own foreign trade on their own national ships," was adopted by the 81 votes of the delegates from the developing states to 23 votes of the captalist countries "opposed," and 9 abstentions by the delegates from the socialist community. In addition to their panic fear in the face of any hints at developing and legitimising any sort of limiting formulas to be applied to the so-called "free enterprise" in the sphere of transporting bulk cargoes, the Western countries, although with less unanimity, also came out against the positions which would set up a framework for gradually abolishing the practice of the "open registration" of vessels under flags "of convenience" as an institution creating serious obstacles for expanding the national shipping of the developing countries.

The socialist countries abstained from the vote on the text of this resolution, for the most part, because its formulations were vague and half-baked. Expressed here were divergencies of views within the "Group of 77" itself, where it was difficult to reconcile the interests, for example, of Liberia, which makes its flag available to American transnational corporations, with the interests, let's say, of Iraq, whose access to hauls of its own export petroleum is shut off by the "facilities of the flags of convenience," whereas 110,000 Philippine sailors are working on ships registered in Liberia, Singapore, or Hong Kong, and for them this problem becomes a most urgent question of employment or unemployment.

As is known, the socialist countries set forth their own position in a declaration on the motives of voting which, under the number TD-267, was included in the minutes of the Fifth Session of UNCTAD. This declaration is of major importance as an appraisal of international relations in present-day world merchant shipping and as a proposal of a method to correct it. The concluding portion of the declaration by the socialist states emphasized that "unilateral actions by individual states or groups of countries in international shipping in any of the separate spheres of the above-mentioned complex of problems can lead only to the development of protectionism and a limiting business practice, which would inflict additional harm on shipping as well as on world trade as a whole."

The exacerbation of the present-day international political situation, brought about by the "initiative" of the American administration, which is speculating on the so-called "Afghan question," merely confirms the generally knowntruth that in periods of economic crises or declines in business activity there occurrs an inevitable shift to the right in the politics of bourgeois states. In the economic sphere this found its reflection in an intensification of the limiting trade practice against foreign competitors, and in the flourishing of an aggressive, offensive protectionism. In international shipping this process has become particularly prominent these days, since a significant reduction in the growth rate of world maritime hauls during the second half of the 1970's was accompanied by an unjustifiably high speculative increase in the tonnage of the merchant fleet, which, in turn, still further intensified competition on the sea lanes which has been sharply exacerbated even without this.

And how did the legislative authorities connected with Western merchant shipping react to this? In 1978 a law was passed in the United States regarding state-owned carriers--a law which is selectively aimed at state forms of ownership in foreign countries and which is protectionist in its contents. In this same year of 1978 the Common Market countries introduced a system for collecting commercial data--a "monitoring system"--concerning the activities of the socialist shipping enterprises which are competing in line shipping with the EES shipowners. This is being done for the purpose of subsequently proceeding, as it was explained, to establishing additional, so to speak, equalising surtaxes on freight charges, cargo quotas, and other forms of limiting the business activities of the socialist countries in line-type merchant shipping.

In May 1979 the Council of Transport Ministers of the EES approved the uniform stipulations to the Convention on the Code of Conduct for the line conferences, which must be done by each member of the Common Market upon ratification of this Convention. The meaning of the stipulations boils down to not allowing, even according to the Code's formula of 40--40--20, the participation of socialist shipping enterprises in the line conferences, operating between the countries of the EES, as well as between ports of members of the OECD, ie, between the capitalist states. This is testified to, in particular, by the text of the stipulation which annuls the application of Article 2 of the Convention of the Code regarding the activity of the above-mentioned line conferences in the region of the OECD, except for members of this organisation and, under certain specified limitations, those of the developing countries. With regard to the other participants in the Code, for example, the socialist states, the Common Market by means of its own stipulations is attempting in general to refuse to grant them what is a basic and fundamental principle of modern international treaty law--the equal rights of all states which are members of an international convention.

Thus, in line with the intentions of the creators of the EES transportation policy, the participation of the socialist shipping enterprises in the "cross-trade" between the capitalist countries as independent carriers will be stopped with the aid of the "monitoring system" after it has been perfected, so to speak, while membership in the line conferences in these same routes will be blocked by the Common Market's stipulations to the Convention on the Code.

The principles of a coordinated shipping policy for the member countries of the OECD will have still further consequences. In October 1979 the Committee on Maritime Transport of this organisation officially adopted a uniform program for the capitalist countries in the sphere of shipping, consisting of 14 points. In its essence this document is the quintessence of protectionism, and it provides for the reinforcement of the dominant position of the Western shipowners in world merchant shipping by any means, including governmental actions. This document began to be worked out as early as 1975, ie, long before any sort of, "Afghan events," and its reactionary essence consists of the fact that if the shipping enterprises of the "countries with state-run trade" (read the socialist countries and many of the developing states) will operate in the international sea lanes in any way which does not suit the shipowners of the capitalist countries, then the governments of the OECD member countries will introduce, including jointly, "limits on entry into ports or access to cargoes, compensatory surtaxes and limitations on creating mixed companies."

They have also worked out an almost mandatory procedure for coordination and mutual information between the OECD members relative to their bilateral contacts with the maritime transport organs of the "countries with state-run trade." Thus, a system has been created within the framework of which pressure will now be exerted on the socialist shipping enterprises not only by the partners in bilateral negotiations but also by all OECD members, which from now on are advocating a unified platform of discrimination against the state forms of ownership in maritime transport.

It has already been mentioned that shipping and the problems of international relations in this sphere have become in recent years a kind of touchstone in the general context of economic relations between the East and the West, and essentially a unique kind of "laboratory," where methods have been worked out to obstruct state-run shipping enterprises, and these methods are then transformed into the doctrine of "incompatibility" of the socioeconomic systems of capitalism and socialism. In addition to justifying the protectionist prescriptions, aimed at eliminating unwanted competitors from commercial markets and sea lanes, the campaign of anti-communism also has another goal--to distract attention from the serious contradictions within the Western alliance. This is a matter of not only consolidating the economic policy of the West under the aegis of the United States against the East, ie, the socialist countries, but also of strengthening the controls over the sources of industrial raw materials, and especially petroleum, in the interests of, again primarily, the United States.

These goals of the American foreign-policy line were revealed without any camouflage by the journal U.S. NEWS & WORLD REPORT in its issue of 21 January 1980 in a detailed article entitled "Are Trade Wars with Our Allies Inevitable in the 1980's?" The journal writes as follows: "During the 1980's conflicts arising out of trade, oil supplies, and currency exchanges will threaten, as never before, to subject the Western alliance to a test of its strength. Tensions and frictions, already evident though somewhat concealed, give promise of becoming, in the opinion of European observers, the dominant trait of relations between the United States and Europe and Japan. These observers fear that the growing differences of opinion will become an inevitable element of the unhappy conditions which they predict in the world economy, although the dangers linked with the growth of Soviet influence may to a certain extent mitigate these differences of opinion." In other words, the injection of fear in the face of the growing influence of the socialist community, in the opinion of these "observers," will be of assistance, to a certain extent, in mitigating the divergences of opinion between the three centers of present-day capitalism.

In summing up what has been said, we may formulate certain basic trends of development in relations in world merchant shipping for the next few years. The attempt by imperialist circles to restore their control over the sources of industrial and energy raw materials, and primarily petroleum, will exert a destabilising influence on international maritime hauls. We may anticipate that under the conditions of the continuing depression in the capitalist economy the volumes of world maritime trade will increase only within limits of 2--3 percent annually. Such a situation may last right up into the mid-1980's. Taking into consideration the numerous special programs for supporting employment in the shipbuilding industry in a number of states, a genuine threat is being created for a new wave of excess tonnage on the world freight markets by 1982--1983 and a new aggravation of competition at sea proceeding from this.

In connection with the growing saturation of shipping by political elements, the role of international maritime organisations, and primarily that of the UN system, will grow. The proportion of shipping in international economic and political discussions will also be increased. We should anticipate that the initiatives of the developing countries aimed at codifying economic relations in merchant shipping will soon be reflected in the form of conventions and international agreements, at least in such spheres as the haulage of raw materials and the further development of the Code of Conduct for line conferences.

The tendency to create regional and sub-regional associations of states united by a uniform shipping policy will grow. Equally, shipping will occupy a more and more prominent place in the activity of those international organizations which specialize in specific products lists (petroleum, coal, rubber, and so forth).

The influence of state organs on commercial relations in shipping will grow at an accelerated pace during the next few years. An extensive development may be attained by bilateral and multilateral intergovernmental agreements on the most diverse aspects of shipping. Tendencies to reduce the volumes of operations on open freight-charge markets will continue to develop.

The principles of the freedom of merchant shipping in the form in which they have been formulated over the last 100--150 years will more and more frequently lose their economic aspects during the next few years, being transformed into freedom of navigation on the high seas and into international regulation of shipping in economic zones and territorial waters. We may anticipate that the governmental organs of the capitalist countries will continue their efforts to create a zone of "free shipping" in hauling cargoes between the industrially developed capitalist countries and the developing states connected with them. The tendencies proceeding from this to limit commercial shipping relations between East and West mainly to the transport of bilateral-trade goods, taking everything into consideration, will assume more and more markedly practical forms.

The foreign-economic shipping policies of the CEMA member countries are not marked by the business (market-conditioned) zig-zags which characterize the capitalist mode of production. The planning principle in building socialism also predetermines the long-term goals of participation by the socialist shipping enterprises in international shipping. The principal task of socialist maritime transport has been and remains the satisfaction of the transportation requirements of foreign trade exchange both within the community as well as well as goods exchange with third-party states.

The existing forms of activity of the socialist shipping enterprises in world merchant shipping basically meet the interests of the socialist community members. Nevertheless, we must not lose sight of the fact that the growth in the aggressiveness of the most reactionary imperialist maritime circles may subsequently require even more active countermeasures on the part of the maritime transport organs of the socialist states. The appropriate mechanisms for consultations and mutual information for this purpose do exist.

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GUZHENKO PRESS CONFERENCE FOR SOVIET, FOREIGN JOURNALISTS

Moscow VODNYY TRANSPORT in Russian 1 Nov 80 p 1

[Article: "A Clear Step for Morflot"]

[Text] A press conference for Soviet and foreign journalists took place yesterday at the Ministry of the Maritime Fleet.

Addressing this meeting, the Minister of the USSR Maritime Fleet T. B. Guzhenko told the press representatives that the workers of the industry, in carrying out the historic decisions of the 25th CPSU Congress, were successfully fulfilling this year's plan and the 10th five-year plan as a whole. The Soviet maritime fleet has developed systematically in recent years. Since 1976 it has been increased by new ships totaling 4.26 million tons. The growth of tonnage during the five-year plan was about five percent in deadweight.

By the beginning of 1981, the enterprises of the industry will have 1,748 ships with a total deadweight of 18.6 million tons. The latest achievements of scientific and technical progress are being considered in the design and construction of new ships. The minister said that it was important to emphasize here that the Soviet Union was developing its fleet, starting from its coastal and foreign trade shipping requirements. The industry is continuing to obtain new and progressive type ships. Such, for example, are the barge carriers "Yulius Fuchik" and "Tibor Samueli." Each of them holds up to 26 barges with a carrying capacity of 1,300 tons apiece. Container carriers of various capacities are continuing to be received. More than a score of horizontal-loading cargo vessels of the "Magnitogorsk," "Kapitan Smirnov," and "Skul'ptor Konenkov" type have joined the fleet during the five-year plan.

The merchant marine is carrying tens of millions of tons of national economic freight in coastal trade. The fleet plays an especially great role in freight shipments to the seas of the North and Far East.

The five-year plans for the development of the national economy in the extreme north, Siberia, and the Far East have called for an intensive development of natural resources.

With the help of powerful icebreakers, including the three atomic giants "Lenin," "Arktika," and "Sibir'," the western section of the Northern Sea Route from Murmansk to Dudinka has been turned into a continuously operating highway. For the first time in the history of Arctic navigation, transport ships have made winter trips to points on the northern seacoast of the country and they unloaded the delivered equipment directly on the ice. The historic trip of the nuclear-powered vessel "Arktika" to the North Pole in 1977 and the 1978 passage into the high latitudes, from west to east through the Arctic Ocean, of the transport freighter "Kapitan Myshevskiy," led by the nuclear-powered vessel "Sibir'," have enormous significance for the development of regular Arctic sailings.

A series of Arctic bulkers--container carriers of the "Dmitriy Donskoy" type, and a large series of "Samotlor" type tankers, have been built for shipping in frozen seas.

The USSR Ministry of the Maritime Fleet is successfully completing the present five-year plan just as it has the past ones. This is so mainly because the industry has the most highly qualified specialists at its disposal. They have created and worked out an orderly system for training personnel which as authoritative an organization as IMKO/Intergovernmental Maritime Consultative Organization/ has called one of the best in the world. T. B. Gushenko said it was necessary to emphasize that the personnel training system was developed for all levels--from seaman to minister.

The Soviet merchant fleet actively participates in the export-import shipping of the country, ensuring that USSR foreign trade is independent of foreign shipowners.

Shipments between ports of our country and the socialist countries have received special development. During the five-year plan, Soviet seamen have delivered a large volume of freight to the fraternal peoples of Cuba, Vietnam, and Kampuchea.

The countries of the socialist commonwealth have concluded agreements among themselves in recent years which have become an effective, long-term program for the over-all development of their water transport and an equitable, mutually-beneficial collaboration. An over-all program for the further deepening and improvement of fellowship and the development of the socialist economic integration of the CEMA countries is being successfully carried out.

New, progressive transportation systems are being introduced on an equitable and mutually-beneficial basis. The Il'ichevsk-Varna ferry railroad crossing is in operation. The minister stressed that it has solved many problems connected with trade between the USSR and the NRB/Bulgaria/. The possibility of expanding this crossing is already being studied now.

An international profitable shipping enterprise "Interlikhter" is operating successfully. The NRB, VNR/Hungary/, the USSR, and CSSR are its founding members and stockholders. This system, in spite of all the complications connected with its management, is already operating at a profit.

The Soviet-Bulgarian shipping organization "Dunaytrans" has also turned out to be very effective. The same fleet that existed before its creation is now transporting almost a third more freight.

When speaking about the foreign economic activities of the Soviet fleet, it is impossible to ignore the situation today on the seas and oceans. International shipping has already been in a condition of deep depression for several years because of the recurrent economic crises in the countries of the capitalist world.

The shipowners of the developed capitalist countries are trying not only to gain the upper hand in the competitive struggle but also to maintain their predominant position in world shipping. They are using economic pressure and political protectionism to do this. The Soviet merchant fleet is also being subjected to strong pressure. They attribute to us an unjustifiably brisk growth in tonnage and they accuse us of dumping, expansionism, and aggression. Discriminatory decisions, aimed at the shipping of the socialist commonwealth countries, are forced through behind the smokescreen of anti-communism.

We are striving to develop cooperation with the capitalist countries. We know that one can always find a mutually acceptable solution. One can even travel on separate lines to self-restraint. However, the minister stressed that we are not afraid of boycotts. We are fulfilling our plans this year better than last year when there was no boycott announced by J. Carter. The positions of the Soviet merchant fleet are firm. Our planned economy has considerable reserves and resources. It is precisely because of this that USSR merchant shipping is successfully completing the planned tasks of the 10th five-year plan. The socialist competition of the industry's labor collectives for a fitting welcome to the 26th CPSU Congress is widening and becoming stronger.

T. B. Gushenko answered questions from the journalists.

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JULY STATISTICS FROM THE USSR REGISTER

Moscow MORSKOY FLOT in Russian No 10, Oct 80 p 4

[Table continued on following page]

Data on the USSR's Maritime Fleet

As of 1 July 1980

(Maritime Ships with a Gross Tonnage of 100 reg. tons or More)

Types of Ships	Steam		Diesel		Total	
	No. of Ships	Gross Reg. Tonnage	No. of Ships	Gross Reg. Tonnage	No. of Ships	Gross Reg. Tonnage
Passenger and Cargo-Passenger	7	119,910	226	536,247	233	656,157
Dry-Cargo	98	540,091	2229	9.756,967	2,327	10,297,058
Oil-Tankers and Gas-Carriers	39	1,371,626	444	3,818,396	483	5,190,022
Service-Auxiliary	95	31,326	728	446,955	823	478,281
Industrial	56	159,210	2,738	4,506,448	2,794	4,665,658
Technical	18	17,903	398	342,796	416	360,699
Misc.	5	47,076	379	501,978	384	549.054
TOTALS	319	2,287,142	7,142	19,909.787	7,460	22,196,929

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OCEAN AND RIVER

FINNISH PRESS REPORTS WARTSILA TO CONSTRUCT NUCLEAR ICEBREAKER

LD132058 Helsinki Domestic Service in Finnish 1530 GMT 13 Nov 80

[Text] One of the most interesting targets of Finnish-Soviet production cooperation is the designing and building of a nuclear-powered icebreaker, which, according to the director general of the Wartsila concern, Minister Tankmar Horn, it is hoped to include in the next 5-year basic agreement between our countries. Juhani Ikonon reports:

If the nuclear icebreaker is included in the next Finnish-Soviet 5-year basic agreement this would mean, according to Minister Horn, that the vessel would most probably be delivered to the Soviet Union at the end of 1985. Horn says that the discussions are still at such an initial stage that Wartsila does not yet know how big a vessel will be considered in the end. In any case the intention is that Wartsila is to build the vessel at its Helsinki shipyard. From there the icebreaker will be towed to Leningrad where the installation of the nuclear reactor will take place.

The building of a nuclear icebreaker is connected with Soviet programs aimed at the utilization of the plentiful natural resources of the Arctic areas. Finnish industry has in general been interested in having a share in the implementation of these programs. Minister Horn said that the designing and building of the nuclear icebreaker would be an interesting challenge to the enterprise he directs. Horn was not yet able to give any exact estimates about the financial value of the icebreaker project, but it is quite clear that the sums involved will be considerable, for even a Baltic icebreaker, equipped with conventional engines, is an investment of hundreds of millions of markka.

Apart from the icebreaker, the long-term program signed in Moscow yesterday refers also more generally to the fact that possibilities are opening for the Finns for an increasingly extensive participation in the implementation of the programs for the utilization of the above-mentioned natural resources.

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OCEAN AND RIVER

DEVELOPMENT OF SHIPBUILDING TECHNOLOGY

Leningrad SUDOSTROYENIYE in Russian No 10, 1980 pp 40-43

[Article by V. S. Mikhailov and Ye. P. Fisak]

[Text] Beginning in 1960, gantry cranes became the most distinguishing feature of almost all shipyards constructed up to the beginning of the 1970s. In this same time, the semitandem method of building ships received widespread distribution. Along with the growth of the dimensions of ships, the dimensions of building docks and gantry cranes were increased. The methods of building ships were improved. Supertankers reached and even exceeded a deadweight of half a million tons. The Japanese firm, Mitsubishi, at its shipyard in /Koyagi/ constructed a building dock with the record dimensions of 990 by 100 by 14.5 meters; and the Swedish firm Kokums, at its shipyard in Malmo installed a gantry crane with a 1500-ton capacity

The construction boom was conducive to a sharp growth of capital investment in new and improved industrial equipment for this generation of shipyards. Basically, the efforts of the shipbuilders were directed toward development of the technology for building large tankers. Increased demand for ships of this type and the peculiarities of their hull structures encouraged a reduction of building times and the development of mechanized hull assembly (especially for the tank parts of the hull) while the assembly of sections, as a rule, was conducted from control panels. The manufacture of the sections is carried out, principally, by two methods: the so-called "Japanese method", where the sections are assembled from strips of plate and separately formed arrays of framing; and the "European method", in which the framing elements are mechanically installed on the plating and aligned in the assembly and welding operations. The world's largest production line for the manufacture of hull panels having weights up to 800 ton and dimensions up to 40 by 30 meters was designed on the European method and is situated in the Hyundai [company] shipyard in South Korea.

The semitandem method of building ships was improved by increasing the number of positions on the building way for the stern parts of ships. In addition, machinery installation operations were improved by the introduction of aggregates and three-dimensional zonal assembly units. Operations in the manufacture and installation of piping, electrical installations and fitting out work also were improved.

The large demand for transport ships was conducive to the appearance of low-cost ships with developed hull forms of the "Payonir" type built by the Blom and Voss firm at a shipyard in Hamburg, and the envelope ship for the transport of wheeled equipment and containers which was built fully afloat on two pontoons at the shipyard of the Finnish stock company, Navire. These ships however, while having high technological effectiveness in construction, were inferior economically and in seagoing qualities to similar kinds of ships with traditional hull form and construction. A combination of good technical and economic characteristics with a high level of technological effectiveness in construction was achieved by Erie Marine in building at a shipyard in Erie in the USA of "Stuart Kort" type ore-carriers for the Great Lakes.

Many more examples could be cited of achievements in the technology and organization of shipbuilding production that took place up until 1973 - the beginning of the energy crisis, and the subsequent sharp drop in the demand for ships, especially tankers. The crisis in shipping, naturally, provoked stagnative and even regressive phenomena in the shipbuilding industry.

In the opinion of English specialists, the excessive productive capacity existing today will disappear by 1990, after which an intensive construction of shipyards of a new generation and the reconstruction of old ones is expected to begin. Considering this circumstance, shipbuilders are working on the creation of concepts for the shipyards of the future. Also being developed are measures for assuring the viability of the old yards. They apparently will consist in the replacement of inclined building ways with improved building and launching facilities, and the creation of areas adjacent to the building ways for the consolidation of hull sections, blocks, and other assembly units. In turn, this will entail the replacement of the cranes serving the ways with equipment of larger lifting capacity, the type of which will be determined for each specific enterprise individually. Most likely the preference will be for gantry cranes with increased outreach serving the building way and the adjacent assembly area. The preliminary and building way assembly of ships will begin to be carried out in shops with mechanized production lines for the manufacture of assembly units or in covered building ways which most likely will be combined into single, closed construction complexes.

What does concern new enterprises then, is some specific scheme for the "shipyard of the future" which still is not worked out, although several prospective solutions already have found practical realization. The Litton Industries shipyard built at Pascagula [Mississippi] in the beginning of the 1970's, and known among shipbuilding specialists as the "shipyard of the future," can serve as an example of this. The general plan of the shipyard, which is intended for the construction of both medium and large ships having lengths up to 300 meters and launching weights up to 57,000 tons, is built around the principle of the intersection of the flow of hull and installation products. Arranged perpendicular to the flow of hull structure assemblies are flows of assemblies of elements of fittings, subassemblies, and aggregates. In intersecting, these flows "penetrate each other" and, according to the measure of the progress of the structures in the direction of the main erecting position, they are consolidated step by step, becoming in the end, large block sections of ships with a weight of 6000 to 8000 tons and considered as independent pieces of work. The engineering solutions of the shipyard correspond to a high engineering, technological, and management level approximating a mass production enterprise.

In formulating a conception of the shipyard of the future, some specialists consider that such a shipyard must build ships of a quite specific or of very similar types. Many such formulations relate to shipyards building transport ships for liquid or dry bulk cargoes. (Conducive to this,in many respects, is the opinion that by the year 2000, large-tonnage tankers, ore carriers, and combination ships with a gross registered tonnage above 40,000 reg. tons will make up 50-60% of the total gross registered tonnage of the world transport fleet.)

It is doubtful however, that there will be a preference for shipyards with a very narrow specialization although there will be a division into small, medium, and large shipyards. The equipment, technology, and management of production will be sufficiently universal as to provide for the construction of the necessary number of types of ships. It is not doubted that ships must be put together from maximally fitted out, large block sections. The division of ships into blocks is done in order to simplify and to reduce to a minimum the operations carried out directly on the building ways. The assembly of blocks must be carried out from repetitive assembly units of the maximum possible dimensions and weight.

All this is not new; such requirements for the division of ships into blocks are made at the present time. What is new is that manufacture of each block must begin in conditions of conveyor belt production with the use of group technology. The essence of group technology as applied to this kind of production consists in the selection of similar blocks among various types of ships within the limits of a production program of one or several shipyards situated in a given region, and manufacturing them on specialized production lines. Sections must also be made in such a group method. In the assembly of sections, standard panels will be used that are manufactured on mechanized assembly and welding lines. It is possible that individual enterprises will be specialized in the production of these panels, applying automatic equipment and using industrial robots.

The joining of the large block-sections is best done on a horizontal building place - usually a horizontal building way or in a building dock. Not excluded is the further improvement of the joining of separate parts of a ship while afloat. In this, engineering solutions that are new in principle can be used;for example, in the building of ships with semisubmerged hulls or in the building of facilities for establishing a submerged platform. For the case of building ships on horizontal building ways, floating drydocks or shiplifts must be widely used for launching them.

It is assumed that shipyards, beginning in the 21st century, will have full integration of all shops and a covered building way. As important arguments for the advantage of building ships in covered building ways are the improvement of working conditions and the exclusion of the influence of weather on the productivity of labor. Building ships in a covered building way precludes the use of gantry cranes and raises the role of ground transport facilities and bridge cranes to provide for the assembly, transport, and fitting out with equipment of the sections and blocks. At shipyards specializing in the construction of transport ships, on lines for the assembly of the cargo holds, it is possible to use ship assembly methods unassisted by cranes. The cargo holds can be formed both from structural block modules and from structural section modules with the aid of manipulating transporting and installing facilities and devices. At existing shipyards having building docks, hull assemblies will be moved along the ship(as this is done already at several shipyards today) but at new enterprises, it is more likely that the hull of the ship will be moved past permanently installed hull assembling units.

The emergence of high-productivity shipyards will increase the stress on systems of managing production,and the importance of the clarity of engineering and standard documentation and the monitoring of its fulfillment, will be vastly increased. Many forecasters, therefore, consider that in the future, great importance will be attached to the management of production.

All that has been touched on above relates principally to the technology and organization of the building of ships. But what new can be expected in the technological processes of the fundamental forms of production?

In making up hull parts, in assembly and welding, and in hull erection, the principal changes in technology are conditioned in the first place by changes of construction materials. Apparently, up to the year 2000, low-carbon, low-alloy and special steels will remain the basic construction materials. It can be expected that alloys of aluminum, titanium, and magnesium,and also structural, thermally-improved steels with micro-alloying of boron, vanadium, and zirconium will receive wide application. The volume of production of multilayered metal materials obtained by the diffusion bonding of plates will be increased. Composite materials, particularly metallic plastics, will find wide use. They will begin to supplant metal materials in many structures. To reduce metal wastes, and to raise the productivity of labor, a change-over to the use of rolled plate delivered in coils can be expected.

The production processes of manufacturing parts from the new materials will not, in principle, be different from those used now; however, the production equipment must be controlled by computers. In the sorting and making up of parts, and also in their transport and transfer from one operation to another, wide use will begin to be made of robots and manipulators. Robots will be used in assembly and welding production for the transport and feeding of parts onto production lines, for the manufacture of subassemblies and sections, for the welding of transverse framing on to strips of plate on production lines, for welding framing parts to themselves or to plate strips in welding cubicles and for arc welding small articles on positioners, and for the resistance welding of hull structures made of light alloys, and other purposes. To provide for the use of thermally-improved structural steels, it is necessary to create automatic equipment for welding it with simultaneous heat treatment of the weld metal and the heat affected zone. Side by side with improving equipment for welding in a medium of protective gas, the problems of the practical application of electron-beam welding in shipbuilding will be solved. The advantages of electron-beam welding in comparison with the usual welding with an arc are: narrow and deep fusion, high speed, and a high quality of weld, increasing the reliability of the welded joint.

It may be expected that the level of mechanization in welding will increase to 90-95%. Despite the mechanization in installation and assembly operations by means of special equipment, the same indicator for the assembly of structures,both in the shop and on the ways, probably will be lower and amount to about 70%. There will be a significant reduction in adjusting work because of increased accuracy in the manufacture of sections. In building transport ships (tankers, dry-cargo ships, multipurpose ships,etc.) up to 70% of the sections will be cut to specified dimensions [without an excess material allowance] before erection. In connection with the wide use of the method of building ships from structural modules and zonal blocks, the necessity arises for tests of open structures with onesided access to a weld joint to be checked. Test methods developed for these purposes allow avoidance of obligatory tests of the hull of a ship by poured in water or compressed air. The polymer foam-forming subatances ("Svalan"type) will be widely used for tests of structures for airtightness.

The improvement of installation work will go along the way of further development of the module and aggregate method of installing mechanisms, piping, and electrical euipment basically because of the creation of large assembly units (zonal and installation blocks, aggregates and modules) which must be manufactured centrally at specialized enterprises, and delivered to the ship in tested form. To assure the delivery of large assembled units with weights from 100 to 700 tons, these specialized enterprises preferably will be situated near waterways connecting them with the shipyards. The change-over to the module and aggregate method of installation of ships' equipment is requiring solutions to questions about the structural and engineering completness of assembly units, their collection, their suitability for repair, and their structural replaceability. The method will allow a sharp reduction in the labor intensiveness and the duration of the design and building of ships.

An important direction of development in the field of installation work is the further development of the progressive methods of installing large assembly units using comprehensive mechanization of manual operations beginning from the receiving of delivered, aggregatized equipment, its unpacking, and its pre-installation assembly from the subassemblies into which it was taken down for shipment, up to its loading onto the ship and connection with the ship's systems. The conservation of aggregatized equipment is possible without the use of conservation compositions that require the later dismantling of the equipment. In prospect, for example, is the method of conservation by inert gas.

Copper piping work will be developed along the path of automating the laying out of ships' general piping systems and providing for the receipt of data for the manufacture of about 70-80% of the piping without the need of adjusting work in place. There also will be improvement in the production processes for its manufacture.

In equipping and finishing ships' compartments, modular systems which bring to a minimum the adjusting work on the ship will receive further development.

The appearance of multilayer metal materials, steel plates coated with plastic or with elastic ceramics, and composite materials based on aluminum and titanium will allow painting operations to be used only for the decorative coating of structures and the protection of the underwater portion of the hull from fouling. As for steel structures, instead of many coats of paint and varnish for corrosion protection, one or two will be applied. Industrial robots will find application in the cleaning and painting of the surfaces of hull structure both when under construction and in repair.

Considering briefly the technology of shipbuilding in the year 2000, it appears advisable to say a few words about the technological effectiveness of ships' structures. It should be expected that under the influence of constantly rising fuel costs, new hull forms (this applies especially to the stern) will be developed for reducing the resistance of a ship and increasing the propulsive efficiency. In several countries work already is being conducted along these lines. Thus, the Danish firm, Burmeister and Wain, has developed a semitunnel stern allowing for an increase in propeller diameter, and Japanese specialists have developed a stern with an assymetric arrangement of the axis of the propeller shaft and an increased propeller diameter.

As for the remaining structures, they will be improved with the aid of machines in the area of the satisfaction of the requirements of their manufacture and in the area of lowering operational costs. The latter improvement will always be the main one.

Conclusions: 1. It should be expected that new shipyards, small, medium as well as large will have sufficiently universal production conditions as to provide for the building of different ships and floating equipment.
2. Existing enterprises, by the year 2000, must undergo appropriate reconstruction.
3. Greater importance will be attached to the management of production and to the methods of building ships than to the productive equipment.
4. Modular systems which allow adjusting work on the ship to be reduced to a minimum will receive further development.
5. The assembly units of ships (sections, blocks, aggregates, zonal blocks, and so on) will be manufactured principally in conditions of conveyor-belt production.
6. Industrial robots and manipulators will find wide application in production.

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PROBLEMS AT RIVER SHIP REPAIR FACILITIES CITED

Moscow VODNOY TRANSPORT in Russian 30 Oct 80 pp 1, 2

[Article "On the Eve of the Winter Ship-Repair Period" by members of the VODNOY TRANSPORT Surprise Inspection Brigade: S. Novak, fitter at the Kalinigrad Ship-Repair Plant of the Western Steamship Line; I. Aleksandrov, mechanic-instructor with the Belomorsk-Onega Steamship Line; V. Zhulidov, chief ship-repair dispatcher for the Kama Steamship Line; V. Baskakov, deputy chief of the Technical Department of the Volga Tanker Line; I. Moiseyenko, chief dispatcher of the Omsk Ship-Repair Yard of the Irtysh Steamship Line; Yu. Kochugurov, associate with the Editorial Board of the newspaper LENINGRADSKIY RECHNIK; and by special correspondents S. Borik, G. Vstavskiy, V. Zagidulin, V. Krayushkin, V. Panyushkin, A Petrov, G. Simkin and V. Fedulov.]

[Text] The navigation season of this, the last year of the 10th Five-Year Plan has entered its closing stage. It was a strenuous and crucial one. It is still too early to sum up the results--on the roadsteads of river basins ship's crews and brigades of port workers continue on with their "shock" work shifts. Facing our river fleet workers are new concerns and responsibilities--the winter ship-repair period.

Our VODNOY TRANSPORT surprise inspection brigade visited many shore-based production enterprises. Today, we will tell you how preparations for the coming, crucial ship-repair period are progressing.

In What Direction--The Brigade Method

Trade-Union Committee Chairman V. Sencha at the Leningrad Ship-Repair Yard of the Northwest Steamship Line had this to say in response to our question as to how this forthcoming ship-repair period is to be organized:

"One of the main points of the additional socialist obligations adopted towards the successful conduct of winter ship repair is reduction of schedules for average fleet repairs with the aid of the brigade method and through increased responsibility for the quality of work undertaken, together with issuance of guarantees adopted by the ship-repair yard. Like in all new things, it is true, not everything is going smoothly. Take this latest example from the average repair work being done to the diesel motor ship "Aleksandr Prokof'yev." The ship's main engines were replaced, to be repaired by one of the plants in Klaypeda. It must be stated, however, that this repair work which was done was not up to the proper level.

"Static tests of the replaced engines aboard the 'Aleksandr Prokof'yev' revealed that one of them was heating up too much. The engine had to be taken apart once again and the cylinder blocks cleaned, i.e., additional work had to be done to make up for work which the plant did not do. We wish that representatives of the RSFSR River Registry as well as of the steamship line's ship repair service would assist us in seeing to the qualitative repair of the engines which we receive. For it is a fact that many engines aboard ship will have to be replaced during the 11th Five-Year Plan period.

"Thanks to the use of this brigade repair method we have now succeeded in stimulating the material interest of ship's crews as to average repair work being done aboard ship and thus to make maximum use of the ship's crew during the winter repair period."

Problems Remain

River fleet workers of the Western Steamship Line are doing everything in their power to conduct the coming ship-repair work in an organized fashion. Kaliningrad ship-repair workers are achieving satisfactory results as to a whole series of positions. An entire cycle of preparatory work on industrial buildings and service structure is now being completed. All this is good, but the surprise inspection brigade uncovered a less-comforting picture in checking out the so-called zero stage. Unfortunately, the mistakes of years past are being repeated. The winter ship-repair period is not too distant and yet the centralized delivery of replacement spare parts and units is not in any way sufficient to cover the needs of ship-repair enterprises. Thus, the Kaliningrad Ship-Repair Yard still has not received the engine spare parts which were to have been supplied by the Novosibirsk Office of the "Snabrechflot" [association]. That same office is also greatly in arrears to the yard as to oil and water pumps and other mechanisms. The Moscow "Snabrechflot" Office is also greatly in arrears to river fleet workers of the Western Steamship Line. This indebtedness may have a particularly bad effect when it comes to the repair of 781- and 1557-design type vessels.

At the Kaliningrad Ship-Repair Yard and at both the Kaliningrad and Sovetsk river ports, where winter ship-repair work is to be conducted, a sufficient quantity of spare parts for the first stage has been accumulated through the individual efforts of the workers there. It is still possible, in the time remaining to us, to increase our reserves of replacement spare parts. Now getting under way at various sectors of the ship-repair yard are competitions for the speedy and more qualitative manufacture of components required for ship-repair work.

Unfortunately, certain problematical questions still remain unresolved. This situation has developed: several vessels of the combined river-sea transport type which were built in 1962 and 1963 had to be repaired almost simultaneously by the steamship line. Each of those vessels will require a considerable amount of welding work in connection with the removal of outer plating. Such work can be done right there at the dock. Due to the fact that the Cherepovets Metallurgical Plant has failed to deliver the required assortment of steel to the ship-repair yard, the repair of these ships in dock is being dragged out at some length. This raises the question as to where and when we are to put vessels of the 911-design type into dry dock. The berths available at the ship-repair yard are not conducive to the docking of this type of vessel or of barges of the 942- or R-57 design types.

There is a project on hand and available for the modernization of existing slipways. Meanwhile, specialists of the RSFSR Ministry of the River Fleet, having failed to resolve in time the task of creating some sort of reserve capacity at the Kaliningrad Ship-Repair Yard, are not doing anything about it even today.

Reserves Must Be Sought Out

The end of October is a busy time for the river fleet people of the Belomorsk-Onega Steamship Line. Preparations for and the conduct of ship-repair work is proceeding at full speed. The volume of such work, in comparison with last year, has increased by 10-12 percent while the material-technical base and the manpower resources of ship-repair enterprises have remained at the same level. This means, therefore, that internal reserves must be sought out and equipment brought up to full readiness. Workers of the steamship line's ship-repair service are occupied with the resolution of this task.

At the Petrozavodsk and Medvezh'yegorsk ship-repair yards and at port repair bases, the work of repairing ship-raising and power equipment is coming to an end and the zero stage is being prepared for at an intensified pace. It is not only the workers of shore-based enterprises but the ship handlers themsleves who will be taking part in this winter repair work. The steamship line has a list of all crew members with ship-repair specialties. They are being included in the collective of workers, whose work will be organized along the brigade method.

There is yet another innovation--so-called repair with heat, when the vessel is not completely dismantled and work is done to it with its boilers functioning. This improves working conditions and increases labor productivity. Using such a method, 20 vessels will be gotten ready for the coming navigation period by 1 January 1981.

On Combat Readiness

This autumn presented the river fleet workers of the western Urals with a pleasant surprise--here it was, the end of October, a time when you could look out the window and see ice everywhere, yet the late frosts had not yet come. The ship repair people of the Kama Steamship Line did indeed take advantage of the prolonged navigation period because within its sphere of influence lies the northernmost enterprise of the river basin--the Moshevskaya River Fleet Base.

Kama River Fleet workers are aware of this fact: if the collective of that base manages to prepare successfully for winter work conditions, this means that, as a whole, ship-repair work throughout the Kama Steamship Line will get fully under way and will be conducted on a high level.

It is a rather complicated matter, this matter of not lowering the tempo of hauling operations and, at the same time, finding it possible to prepare ahead of time for the forthcoming navigation period and to haul out of the upper reaches of the river basin 3 million cubic meters of wood in winter log floats. For this purpose, 4 tugs of the 732-design type have already been repaired at the Chistopol' Ship-Repair Yard and at the Zaozersk Maintenance and Service Base. Within a matter of days, these tugs will arrive at the Moshevskiy Dam in order to be among the first to begin the timber rafting portion of the 1981 navigation period.

Yet another matter of no little importance is being accomplished these days on the Kama River. A resolution has been adopted to repair 10 to 12 not self-propelled barges prior to the freezing up of the river, this in order to load them with 10,000 tons of grain products this autumn for speedy delivery in the spring to the northern regions served by the Kama River.

The collective of workers at the Moshevskaya River Fleet Base were the first in the river basin to report completion of repair work ahead of schedule of their ship-repair equipment. It has also been resolved there to have the enterprise fully ready for winter work conditions by 1 November of this year. The power equipment of the maintenance and service base is now in proper working order, while work is being concluded on preparing ship-repair equipment for the winter.

On the Old Foundation

Only weeks remain until the beginning of the ship-repair period on the Mid-Volga Within this comparatively short period of time lies the basic part of all preparatory work, on the fulfillment of which hinges the favorable outcome of the entire winter campaign. According to the evaluation of the leaders of both the Volga Tanker Line and the Kuybyshev Ship-Repair Yard of the petroleum fleet, this preparatory stage is proceeding normally.

Actually, at first glance, this appears to be the case. At enterprises where over 70 percent of the large-tonnage tanker fleet will be spending the winter, such main installations as the slip and caisson are in good technical condition.

However, the ship-repair yard seems to have run out of time, just as in previous years. The ship-repair zero stage seems to be fulfilled by 25-30 percent, at the maximum. Manufacturers of couplings for tanker pumps, of propeller shafts, of bushings and casings have failed to deliver them. Because of this, the Kuybyshev workers find themselves in a very difficult situation. If these were enterprises which had no relation to the tanker fleet, it would be all right. But the enterprises to whom these parts are owed are such ship-repair yards as the Imeni 30th Anniversary of the October Revolution, Imeni 3rd Internationale, which are subordinate the Volga Tanker Line.

The situation at those enterprises are further aggravated by the fact that their directors have failed to make an objective evaluation of the situation which has developed and seek to write off their production woes to factors which are outside their control. Usually, they rely upon such justifiable arguments as their limited productive capacity, the lack of personnel with ship-repair specialties, plus unsatisfactory fulfillment of orders for the delivery of spare parts.

Virtually nothing is ever said about the internal reserves of these enterprises. They exist, yet far from full use is being made of them.

Here is what was told to us by Yu. Gustarev, chief of the ship-repair service for the Volga Tanker Line: "A strange situation has developed: at our shipyard, where we almost never involve ourselves in questions dealing with the restoration of ship-steering machinery, the renewal of pumps for all types of systems, the organization of an inventory list of all mechanisms which should be repaired, the emphasis is being placed solely upon new components. In the face of such a consumption attitude it is impossible to satisfy the requests made by the enterprise. Despite repeated instructions from the tanker line, the shipyard has not done a thing about the creation of specialized sectors."

Ready For Operation--But In Winter

The previous repair season at the Omsk Ship-Repair Yard was completed with a great deal of difficulty. There was considerable delay in placing dozens of vessels into operation. In order to eliminate a similar situation in the future, the ship-repair workers of Omsk made very careful preparations for the forthcoming ship-repair period.

"We thought through all of our questions early," Yard Chief Engineer S. Volodarskiy told us, "when the ships were still out sailing. First of all, in order to avoid being overwhelmed by work in the summer, a decision was made to place a significant portion of our ships into operation in the winter. With this aim in mind, the yard worked out regulations on turning over vessels for operation. These regulations were coordinated with all of the steamship line's services involved and with the RSFSR River Register. Without any doubt, ships will be turned over to us which have only an insignificant amount of repair work to be done to them. The enterprise has already set up a schedule for placing vessels in technical and operational readiness. By 1 November, we plan to have no less than 15 ships ready for operation by the line, including 1 vessel which is undergoing average repairs. The basic portion of our fleet is now being readied for future trips through use of the brigade method. In connection with this, a great deal of work has been done among ship's personnel. Even prior to the restoration of the fleet, a detailed list of speicalists was made. Every member of a ship's crew knows in advance where he is going to work during the ship-repair period, and when and for how long he is going to be able to rest."

In order to increase the interest of ship's crews in completing repair work ahead of schedule, the yard is preparing regulations calling for bonuses to be paid out of the material encouragement fund. The situation in regard to the preparation of ship's engines is better than it was last year. As is evident, the lesson of the past has not been wasted on the ship-repair workers of Omsk. Preparations for the ship-repair season were made well ahead of time and in a business-like manner.

"As our inspection proved, however, shortcomings still exist and they are very substantial. The yard has lagged substantially in the manufacture of replacement parts. By mid-October this important program was only half fulfilled. Difficult also is the situation regarding Ot- and Ota-type engines. It is necessary that we have 10 such engines in our replacement fund, yet we only have 5 of them on hand. We have lagged behind in the repair of communal services quarters. The yard's equipment assembly shop has now been supplemented with men from ship's crews but, as before, there is no place for them to dress or to wash up. Also, as in previous years, our workers are having trouble in being supplied with tools and transport."

Conserve Heat

Vessels assigned to the Krasnoyarsk Ship-Repair Yard are now making their last trips. The place assigned to all of them is the same--the cove out of which they all came. How ready are our ship-repair workers to meet them and the raw Siberian winter?

The yard's old shops clearly were not designed to cope with today's fleet. Being put up to replace them are new buildings to house the equipment assembly and casting shops, plus an engineering building. Meanwhile, however.... Repeatedly we heard this catchphrase: "We'll never heat up heaven." Yard Chief Mechanic Yu. Okishev, the very man responsible for preparing the yard for winter, elaborated on this thesis for us:

"The roofs of our shops are uninsulated and the design of the building itself will not allow us to do this in proper measure. As a result, precious heat escapes. We are short of that heat: the city's TETS is not supplying enough heat to our ship-repair yard. What we ought to be doing, of course, is to patch up our exterior doors, to install glass, paint the shower rooms, and repair our saturation facility. But this has not been done. One of the reasons for this is that construction lumber was late in being delivered to the yard; we have only just begun preparing the saw-timber needed for the outer doors and window frames.

"The yard has many problems: new shops are needed, we need to replace outmoded and physically worn-out equipment, the slip needs major overhaul, and we do not have enough people. The resolution of these questions requires money and time. Yet it is somewhat awkward for me to speak of such concerns and problems as putting glass in windows and insulating the doors."

In facilitating preparations for work under the winter conditions which exist in our country, we must now concern ourselves with personnel, with seeing to it that production brigades are supplied with metal, spare parts, units and materials. We must give thought to the introduction of progressive methods and to the scientific organization of labor. We must set out the path for raising the culture of production and expand our socialist competition with every day.

Our best ship-repair yard collectives will carry out their outstanding winter operations under this slogan: "Do your ship repair work in a qualitative manner, economically, and ahead of schedule." This will be the main requirement also in the forthcoming ship-repair period.

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CREATION OF NEW BUREAU AT NOVOROSSIYSK SHIP REPAIR PLANT ADVISED

Moscow MORSKOY FLOT in Russian No 7, 1980 p 47

[Article by V. Derushinskiy: "A Bureau Must Be Created"]

[Text] The Novorossiysk Steamship Company now has 14 ships with a displacement of more than 100,000 tons each in use and this number will jump to 20 by the end of the 10th five-year plan. Taking this into account, the collective of the Novorossiysk SRZ[Ship Repair Plant] has already started organizing the repair and dredging work for large-capacity "Crimea" class tankers and bulker tankers. The plan calls for development of renovation projects of the west pier in Novorossiysk for the organization of repair and preventive maintenance work and the Novorossiysk SRZ for the repair of "Crimea" class ships and large-capacity bulker tankers.

The Black Sea TsPKB[Central Planning and Design Office] has started to plan a floating dock and they are considering the option of locating it on the outer side of the Novorossiysk SRZ east pier. The plant is obtaining documentation on "Crimea" class tankers which is necessary for their repair.

They must create a technological design bureau to accumulate technical specifications and data dealing with the tankers, to process the acculuated data which is developed during the operation of the ships, and to develop technological processes for the repair of equipment, devices, mechanisms, and hull structures. Experience shows that it is impossible to drag out the solution to this problem.

The Novorossiysk ship repairers have gained some experience in conducting preventive maintenance on the tankers "Crimea" and "Kuban'." Preventive maintenance of the turbogenerators and the repair of the KVG-80 main boiler have been done on these ships. In addition to the work specified, they repaired the systems, pipelines, and fittings. In accordance with technology developed by the chief designer's division, workers at the plant and at the fleet technical servicing facility have replaced sections and the economizer of the main boiler on the tanker "Kuban'." In the future the plant is going to replace the main boiler desuperheater on the tanker "Krym."

Timely and qualitative production preparation and personnel training will permit the Novorossiysk ship repairers to successfully master the repair of a large-capacity fleet.

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BRIEFS

NEW HARBOR--The construction of a powerful complex for reloading coal and ore has begun on the shore of the Grigor'yevskiy estuary near Odessa. Special container ship berths will also be constructed. The new port's deep water berths are intended to accept the most modern large-capacity ships with an annual freight turnover of 25 million tons. The new commercial port of Yuzhnyy will become the largest harbor in the country. [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 44, Oct 80 p 4] 8524

CATAMARAN PRODUCTION--The Sverdlovsk Transportation Machinery Plant imeni Ya. M. Sverdlov is manufacturing small riding craft--catamarans, which can be used at the sea and river beaches of vacation resorts and guest houses, sanatoria and Young Pioneer camps, at boat houses and rental points. The catamaran is noted for its very good steadiness even with a roughness of 2, its lightness(it weighs 46 kilograms), its high maneuverability--the boat's full turning radius is five meters, and it runs silently at a speed up to seven kilometers per hour. The catamaran exceeds the ordinary water bicycle for these indicators. In addition to this, it has the most modern propelling agent--a treadle drive on a screw propeller which permits the craft to be operated by only one passenger. There is one other feature--the catamaran's transportability. With the seat removed, it can be transported with the help of special clamps along the coast or from pond to pond on the roof of any automobile. The catamaran is a new model with an improved drive and steering system. Its cost is 300 rubles. Address any questions concerning wholesale purchases to the Sverdlovsk facility Roskul'ttorg[Republic Office for Wholesale Trade in Goods for Cultural Purposes and Sporting Goods] (620134, Sverdlovsk, telephone number 52-54-81) or to the sales division of the producer plant(620027, Sverdlovsk, telephone number 51-56-28). [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 44, Oct 80 p 22] 8524

SCIENTIFIC RESEARCH VESSELS--Leningrad--The "Professor Vize," scientific research ship of the Arctic and Antarctic Scientific Research Institute, recently headed south. At the institute they told our correspondent the following: the "Professor Vize" is traveling to the region between New Zealand, Australia, and Antarctica where, as part of the 26th Soviet Antarctic Expedition, it will continue work on the large international program entitled POLEX-SOUTH which translates to the South Pole Experiment. The "Professor Vize" will join at the work area with our scientific research ship "Professor Zubov" which is already operating there and the ships of the Fareastern Steamship Agency which are also working in the POLEX-SOUTH program. [Text] [Moscow SOVETSKAYA ROSSIYA in Russian 18 Nov 80 p 4] 8524

SIBERIAN RIVER TRANSPORT WORKERS--Novosibirsk--The collective of the West Siberian River Steamship Agency fulfilled the five-year plan for all indicators ahead-of-schedule. More than 127 million tons of freight were transported. The flow of goods into the northern regions of the Tomsk and Tyumen' oblasts has especially grown. More than 32 million tons of equipment and materials have been delivered to the oil workers, gas workers, and geologists of Western Siberia. This is 2.4 million tons more than envisioned by the plan. The five-year plan has been fulfilled but the intense heat of competition is not abating. The steamship agency subunits have resolved to transport at least an additional 350,000 tons of freight--grain, oil products and building materials, before the close of the 1980 navigational season. [Excerpts] [Moscow EKONOMICHESKAYA GAZETA in Russian No 46, Nov 80 p 11] 8524

NEW DRY CARGO SHIPS--Navashino(Gor'kovskaya Oblast), 31 Oct--The Oka Plant shipbuilders opened a new page today in the technical re-equipping of the river fleet. The lead ship of this series of flexible dry-cargo vessels was laid at the enterprise's building slip. Up till now the Navashino shipbuilders have supplied the 5,000-ton capacity "Volgo-Don" class dry cargo ships to the river transport workers. The vessels of the new series will significantly increase river transportation effectiveness. Having the same size crew and only a slightly more powerful power plant, the dry cargo ships of tomorrow will each carry 10,000 tons of freight. [Text] [Moscow PRAVDA in Russian 1 Nov 80 p 1] 8524

NEW OIL-ORE CARRIER--Nikolayev--The Nikolayev Plant Okean has completed the construction of the 130,000 ton oil-ore carrier "Akademik Pavlov." This giant will transport grain, apatites, ore concentrates, and also oil and its refined products. The dock period for the construction of the "Akademik Pavlov" was almost two months shorter than for the previous ship of this same series. This is the result of the socialist competition in honor of the 26th CPSU Congress which was widely developed in the enterprise. The crews of I. Rossoshinskiy, V. Gvozdenko, A. Taftay, Yu. Voykhevich, and A. Bykovets are its leaders. [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 7 Oct 80 p 1] 8524

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